Thanks for Nothing? Not-for-Profits and Motivated Agents.

Maitreesh Ghatak * and Hannes Mueller†

June 2010

Abstract

We re-examine the labor donation theory of not-for-profits and show that these organizations may exist not necessarily because motivated workers prefer to work in them, or that they dominate for-profits in terms of welfare, but because the excess supply of motivated workers makes the non-profit form more attractive to managers. We show that if firms had to compete for motivated workers then not-for-profit firms would be competed out by for-profit firms. Therefore, in the choice between not-for-profit and for-profit provision, other than incentive problems, the distribution of rents between management and workers, and consequently, the relative scarcity of motivated workers may play an important role.

Keywords: not-for-profits, intrinsic motivation, labor donation, free riding

JEL Codes: L31, J32, L33, J42,

*Department of Economics and STICERD, R530; London School of Economics; Houghton Street; London WC2A 2AE; United Kingdom. Tel: +44 (0) 207-852-3568. Email: m.ghatak@lse.ac.uk.

†Institut d'Analisi Economica, CSIC; Campus UAB; 08193, Bellaterra (Barcelona); Spain. Tel: 00 34 935929774. Email: hannes.mueller@iae.csic.es.

1 Introduction

The strength of the not-for-profit sector has long puzzled economists in the light of the basic assumption that financial incentives are an important engine of economic activity in a market economy.[1] The existing view of not-for-profits is that they are a second-best response to certain types of incentive problems.[2] One set of theories focusses on *contract failure* (Hansmann, 1980) and argue that the not-for-profit status enables the management to commit to a higher level of quality or to ensure that donated money or labor will not be appropriated for private gain (e.g., Easely and O'Hara, 1983, Glaeser and Shleifer, 2001, and Bilodeau and Slivinski, 2004). Another set of theories (see, Francois, 2000, and 2003) focus on free-riding within a firm and argue that the not-for-status might be a credible commitment device on the part of the management to supply less effort than in a for-profit firm, thereby inducing greater labor donation from intrinsically motivated workers. Both sets of theories of not-for-profits either show or implicitly assume that they are a welfare-enhancing institution.

In this paper we re-examine the labor donation theory of not-for-profits based on free-riding, and show that it suggests an alternative, somewhat darker view of not-for-profits. The starting point of the labor donation theory is that not-for-profits tend to be concentrated in activities that have a public good element, and that volunteering is an important source of labor in these organizations.[3] We show that not-for-profit organizations may exist in these activities because the excess supply of motivated workers makes the

[1] A study of 26 countries conducted in the mid 1990s (Salamon et al, 1999), for example, found that not-for-profits employed an average 6.8 percent of the non-agricultural workforce (12% in the case of the US). Another study of eight OECD countries about a decade later (Salamon et al, 2007) show that not-for-profits contributed 8% to GDP on average (7.2% in the case of the US).

[2] See Rose-Ackerman (1996) and Francois and Vlassopoulos (2008) for excellent surveys of the literature.

[3] Health, education, and social services account for 61% of the contribution of not-for-profits to GDP on average in the eight countries studied by Salamon et al (2007). About half of the 14 million full-time employees in the US not-for-profit sector work on voluntary basis and volunteer time accounts for about a quarter of not-for-profit contribution to GDP on average in the seven countries studied by Salamon et al (2007).

non-profit form more attractive to managers without any concomitant gain in welfare compared to for-profits. The choice between not-for-profit and for-profit provision is therefore not only a question of resolving incentive problems but also one of distribution of rents between management and workers. We then proceed to embed the choice of for-profits vs. not-for-profits in a labor market setting where firms and workers match endogenously. We show that if motivated workers are scarce then competition for them would lead for-profit firms to drive away not-for-profit firms. We also show that if managers are sufficiently motivated, either financially *or* intrinsically, they will switch to for-profits. However, as one would expect, unless worker motivation crosses some threshold, managers will never choose not-for-profits.

Our goal is not to argue that not-for-profits are undesirable but to highlight a particular effect that strikes a cautionary note on thinking about their welfare consequences. The labor donation theory based on free riding and the theories based on contract failure suggest distinct but not mutually exclusive mechanisms. In a model that combines both, the negative welfare results will be mitigated.

Our analysis also highlights the importance of understanding organizational choice between for-profits and not-for-profits in a (labor) market setting and has several empirical implications. For example, it suggests that the importance of not-for-profits relative to for-profits within a sector would depend on, among other things, the relative scarcity of workers. Also, it implies that measures of labor market slackness (e.g., the unemployment rate) may be important omitted variables to consider in studies that look at the effect of not-for-profit status on wages and labor donations.

Our paper starts off with a model of organizational choice similar to Francois (2003). The basic assumption is that both managers and workers are intrinsically motivated by the success of the project. Effort by either of the two leads to a successful outcome and the worker moves first. This gives rise to a free-rider problem in the firm, as long as the manager has an incentive to exert effort when the worker did not do so yet. The choice of not-for-profit status by the owner/manager of a firm can then be understood as an attempt to resolve the free-rider problem arising within the firm.

Not-for-profit status is chosen because it reduces financial incentives for the management and commits it to non-provision of the public good. This commitment guarantees workers that their individual contribution will make a difference in provision and allows managers to reduce the wage payment. The resulting gain can compensate the manager for lost profits and makes the not-for-profit an attractive choice for the manager. In other words, the not-for-profit status is chosen for projects that are financially not too beneficial because it makes more effective use of the worker's intrinsic benefits from public good provision.

However, we show that the adoption of not-for-profit status by the manager increases the burden for the worker. If worker-manager matches arise endogenously in a labor market, not-for-profit firms can only compete with for-profit firms when there is an excess supply of motivated workers. If motivated workers are scarce, not-for-profits are crowded out. This finding provides a new possible explanation for the association between volunteer labor and not-for-profit status, namely, the abundance of motivated labor in some sectors.

If both for-profits and not-for-profits are feasible we show that not-for-profits are (weakly) dominated by for-profits in terms of welfare. This result is even stronger if we introduce some uncertainty and projects can fail with some probability even if either the worker or the manager supplies effort.

An important feature of the model is that organizational choice only affects the distribution of rents within the firm but not the nature of production. We assume that intrinsic motivation is output-based where output is single-dimensional and there is no second dimension like consumer welfare or quality. This implies that financial incentives do not harm consumer or donor welfare - whoever benefits from the project just cares about project success. We do not do this because we think it is particularly realistic but in order to separate out the labor donation theory based on free riding from the contract failure literature in a clear-cut way.

This article is structured as follows. We discuss the related literature in greater detail in section 2. Section 3 presents the model in three steps. In sections 3.1 we lay down the basic framework, and in section 3.2 we

analyze the case of exogenous matching between workers and managers to derive the basic mechanism by which not-for-profits can arise. In section 3.3 we discuss endogenous matching to show the effects of labor scarcity on organizational choice. The welfare implications of not-for-profit provision are discussed in section 3.4. In section 4 we extend our model to show that the commitment of the manager to no effort via the not-for-profit status is likely to come with a strict cost in terms of welfare if production has a stochastic element. Section 5 discusses some empirical implications of our findings, and section 6 concludes.

2 Related Literature

The main idea behind the contract failure literature is that by limiting monetary incentives for owners not-for-profits enable the managers to commit to higher quality (e.g., if there is an underlying cost-quality trade-off) and/or attract key inputs from others (e.g., donations, labor). The key feature of not-for-profits form the legal and contractual point of view is that they operate under a non-distribution constraint (Hansmann, 1980, 1987) under which these organizations cannot distribute residual earnings to individuals who exercise control over the firm (e.g., officers, directors, members). They can earn profits, so long as they are retained for future spending, distributed to the beneficiaries in some form, or given to employees within the organization without control rights.[4] Hansmann (1980) provides a brief analysis of the role of not-for-profits in signalling and screening managers who vary (unobservably) in terms of how much weight they put on money versus the output of the organization. Easely and O'Hara (1983) model a society that is interested in maximizing welfare. The basic conflict in their framework is between the manager of a firm and consumers of firm output. They show that when output cannot be observed by society then managers have an incentive to raise their own utility and delivering less to the consumers. The

[4] For example, even if the chief financial officer of a university can be given a bonus payment he can be fired by the President or the Board of Trustees, and the latter cannot be residual claimants.

nondistribution constraint works to restrain this kind of behavior.

Glaeser and Shleifer (2001) model the incentives of a manager who chooses between a for- and not-for-profit setting. They argue that profit incentives might lead to undesirable outcomes from the point of view of donors who value the non-contractible outcome of the firm. Their argument is related to the multi-tasking argument of Holmstrom and Milgrom (1991). Motivating an agent on a contractible task (effort in increasing output or reducing costs) might lead to undesirable outcomes because another non-contractible task (effort in improving quality) is neglected. They show that not-for-profits remain attractive for managers because the reduced financial incentive in the not-for-profit is compensated for by the increase in donations.[5] A similar argument is made by Bilodeau and Slivinski (2004), who show that the non-distribution constraint provides the entrepreneur with a means of committing not to appropriate funds which others wish to assign to the provision of the public good, and so it induces higher donations by the public.

An important recent contribution by Francois (2000) provides a formal analysis of the theory of labor donations. He starts off with the premise that workers are intrinsically motivated in certain activities. He looks at an environment where there is a problem of moral hazard in teams or free riding within the organization. He shows that when workers receive intrinsic motivation from the provision of an output, the firm faces a public good problem. If the manager is very motivated to provide the output, he needs to pay the worker a higher wage to motivate effort because the worker knows that provision is likely even if he shirks because the manager will step in. Francois argues that this need to pay higher wages under a for-profit is the reason why the reduced financial incentives in the public sector can be attractive to a social planner, as it would reduce the wage. We follow the same basic argument but show that if the for-profit is feasible it will weakly increase welfare compared to not-for-profit provision (and strictly so under some circumstances).

[5] Vlassopoulos (2009) show that if one introduces reputational mechanisms in the Glaeser-Shleifer framework, then for-profit status may dominate not-for-profit status.

The idea that intrinsic motivation might lead to a wage differential between the for- and not-for-profit sector has received a fair amount of attention in empirical work.[6] According to our model, one interpretation of this finding is that managers induce workers to accept lower wages through a commitment to inactivity, which suggests a gloomier picture of the not-for-profit status.

While the effect of competition in output markets on the sectoral mix has been discussed in the theoretical literature on not-for-profits[7] the effect of competition for workers on organizational choice remains relatively unexplored.[8] A related paper in this respect is Besley and Ghatak (2005). In their model, mission oriented managers and workers have an interest to match with each other because this implies higher output inside the match. However, their work does not discuss the role of the nondistribution constraint in this context. The benefits from motivated agents depend entirely on the worker-manager match but are independent of the organizational form. Another related paper is Macchiavello (2008) who study the selection of motivated workers into the public vs. the private sector and the ambiguous role that high wage premium in the public sector can play.

3 The Model

3.1 Basic Framework

In this section we present a simple model of organizational choice. A firm consists of a worker (W) and a manager (M). For now, we take the match between the worker and the manager to be exogenously given and will consider later the consequences of how they are matched via a labor market.

The worker provides labor and the manager owns an asset that is required for production. In addition, the manager can intervene in the production

[6] See, for example, Mocan and Tekin (2003), Preston (1989), Rose-Ackerman (1996), and Gregg et al (2008).

[7] See for example Lakdawalla and Philipson (2006).

[8] See for example Francois (2003) or Rowat and Seabright (2006) who develop arguments around the lower (efficiency) wage in the not-for-profit sector but do not discuss competition for workers.

process by allocating additional resources (effort) once the outcome of worker effort is observed. Before production starts, the manager chooses the firm's organizational form (i.e., choice between for-profit and not-for-profit status), sets wages, and terms of employment (e.g., the worker can be fired in the case of bad performance). The worker then accepts or rejects the offered contract. If she rejects she remains unemployed and the manager proceeds alone.

Production proceeds as follows. The worker moves first and chooses whether to work ($e_W = 1$) or shirk ($e_W = 0$) in the production of first stage output (y_1), given by $y_1 = e_W$. If she exerts effort she incurs an effort cost of 1. Both efforts are non-contractible, as in models of moral hazard in teams. The intermediate output, y_1, is observed by the manager but not by any third party. As a result, either input-based or output-based (or, piece rate) contracts are not feasible.

Given that the worker's effort and output is not verifiable, the manager can only pay a fixed wage, w. We follow the literature on efficiency wages (Shapiro and Stiglitz, 1984) and implicit contracts (MacLeod and Malcolmson, 1989, Baker, Gibbons and Murphy, 1994) where the worker is given a flat wage which is chosen such that the he gets a rent, and then if it turns out he did not supply effort (the performance measure being observable to the manager but non-contractible) he is fired.[9] As in the literature on efficiency wages and implicit contracts, we assume that the only legally verifiable pieces of information are money payments and whether or not a person is employed by a firm (see MacLeod and Malcolmson, 1989). Therefore, the manager can fire a worker even if he exerts effort but has to pay a wage. This rules out the possibility that the manager can fire the worker even if he exerts effort.

[9] We show in Appendix G that the main results go through in the case where intermediate output is a noisy signal of effort and the manager can contract on it, as in standard models of moral hazard. We use efficiency wages for simplicity, as well as comparability with the existing literature (in particular, Francois, 2000, 2003). Also, to keep things as simple as possible, we assume that the manager finds out from intermediate output the worker's effort choice with certainty. Our results go through if we allow a noisy detection technology of worker effort (as in the efficiency wage model of Shapiro and Stiglitz, 1984).

If the project is in danger of failing ($y_1 = 0$) the manager decides whether he wants to exert effort ($e_M = 1$) or not ($e_M = 0$). Second stage output is then determined by his effort choice: $y_2 = e_M$. The cost of effort by the manager is $c \geq 1$ and will be discussed below in more detail.[10] An alternative interpretation of the manager's effort cost is that it reflects the wage paid to a replacement worker who is then supervised closely.

Project success ($\max(y_1, y_2) = 1$) yields a financial return of π. In addition, we assume that manager and worker are intrinsically motivated. Both derive some utility from the project being successful. In particular, we assume that the output of the project is a public good to the worker and the manager. They receive a benefit of θ_j ($j = W, M$) from project success independently of their own effort and organizational form of the firm.[11]

As an example, we can think of a research project. If the project is successful then both the worker (a research assistant, a field worker, or a laboratory assistant) and the manager receive a positive non-pecuniary payoff because it helps society in some way. In addition, there are some financial benefits which can consist of research grants, salary increases, increased budget for the research group, or money obtained from patenting the innovation. The worker and the manager both have the skill to provide the appropriate labor input but for reasons of comparative advantage the worker is hired to do it. However, if the worker does not provide it then the manager has the choice to step in and save the project, or let it fail.

We assume that not-for-profits are characterized by a non-distribution constraint, i.e., the manager cannot take home all the profit, π, in case of project success.[12] Below we follow the formulation of Glaeser and Shleifer (2001) of the non-distribution constraint. In particular, we assume that committing to a non-distribution constraint means that the manager can

[10] In this formulation the two types of effort are substitutes (as in Francois, 2000, and 2003) and this naturally exacerbates the problem of free riding. The results go through so long as the efforts are not strong complements.

[11] In the terminology of Francois and Vlassopoulos (2008) we assume output-oriented altruism as opposed to action-oriented altruism.

[12] The manager could pay himself a flat wage and if output was constant, he could appropriate the profits by setting this wage to be high. If output is variable then he will not be able to appropriate the surplus with a fixed wage.

still capture some share of the profits α. In their interpretation, the share $1-\alpha$ is lost because the manager's technology of capturing some of the profits is inefficient (e.g., in the form of perks) - it is equivalent to *burning* a fraction $1-\alpha$ of the profits.[13]

We allow the manager to choose any $\alpha \in [0,1]$. A not-for-profit firm is then defined by $\alpha < 1$ and a for-profit firm by $\alpha = 1$. We assume that the choice of α has no direct costs.

Following the efficiency wage literature, we assume that the manager can motivate the worker by threatening to fire her in case she is caught shirking as in standard efficiency wage models. Naturally, the worker will have to earn some rents for the firing threats to have bite. We assume that the worker has no liquid wealth and there is a limited liability constraint so that the worker's wage cannot be less than some minimum level (which we assume to be zero for simplicity). Otherwise, performance bonds or penalties could be used to give additional incentives. The worker is caught shirking and fired with certainty if $e_W = 0$ and never fired if $e_W = 1$. Let $\rho \leq 1$ denote the probability of a currently unemployed worker staying unemployed.[14] Since in equilibrium workers do not shirk and are never fired, without loss of generality our analysis will focus on the one-shot payoffs of managers and workers.

The timing of the within-period game is as follows. First, the manager chooses (α, w). Workers observe this and apply for a job in the firm. From the set of workers who apply (whose types, in terms of θ_W, is observable to the manager), the manager chooses a worker. If a worker rejects, the manager can proceed alone or costlessly approach another worker with a new contract. Once the match has been made, the manager pays w to the worker up front. The worker then decides on $e_W \in \{0,1\}$. Intermediate

[13] See also Hansmann (1980, p. 873-875) for some anecdotal support for this formulation. Another possible interpretation is that the share $(1-\alpha)$ goes to the beneficiaries in some form. We discuss the welfare outcomes for both scenarios in section 3.4.

[14] In order to keep the model as simple as possible we assume that this probability is not affected by labor market conditions. For the same reason we assume that there is no noise in the supervision technology, and once employed a worker who does not shirk keeps his job forever (i.e., there is no chance of exogenous break up of a match).

output y_1 is observed (without any noise) by the manager but not by any third party. If $e_W = 0$ the manager decides whether to rescue the project, i.e., chooses $e_M \in \{0, 1\}$. At this stage the manager cannot costlessly hire another worker. This reflects the assumption that there are some delay costs involved if a worker who is hired does not perform.[15] One interpretation of this is the manager himself steps in and supplies the required effort. Alternatively, he hires another worker to do it, but has to directly supervise him, and this is costly (i.e., $c > 1$). He also decides whether to fire the worker who was originally hired, and hire another worker for next period.

Let e_W^* and e_M^* denote the effort choice of the worker and the manager that are induced by the choice of α and w via the incentive-compatibility constraints of the worker and the manager described below. Let $\bar{u}_M$ and $\bar{u}_W$ be the outside options of the manager and the worker, respectively. The manager's problem is:

$$\max_{\{\alpha \in [0,1], w\}} EU(e_W^*, e_M^*) = e_W^* (\alpha\pi + \theta_M) + (1 - e_W^*) e_M^* (\alpha\pi + \theta_M - c) - w$$

subject to the following constraints:

(i) the participation constraint (PC) of the manager:

$$EU(e_W^*, e_M^*) \geq \bar{u}_M$$

(ii) the PC of the worker:

$$\max (e_W^*, e_M^*) \theta_W - e_W^* + w \geq \bar{u}_W,$$

(iii) the incentive compatibility constraint (ICC) of the manager:

$$e_M^* (\alpha, \pi, c, \theta_M) = \begin{cases} 1 & if \quad \alpha\pi + \theta_M \geq c \\ 0 & otherwise \end{cases}, \tag{1}$$

[15] If the manager could substitute immediately an equally motivated worker at equal cost the ability to commit to no effort would disappear and not-for-profits would never be found as in Francois (2000, 2003).

(iv) the ICC of the worker (which is derived in Appendix A):

$$e_W^*\left(w, e_M^*, \theta_W, \beta\right) = \begin{cases} 1 & if \quad \frac{\theta_W + w - 1}{1-\beta} \geq w + e_M^* \theta_W + \frac{\beta}{1-\beta\rho}\left(\bar{u}_W + \beta\left(1-\rho\right)\frac{\theta_W + w - 1}{1-\beta}\right) \\ 0 & otherwise \end{cases} \tag{2}$$

where $\beta < 1$ is a discount factor and $\rho \leq 1$ is the worker's probability of staying unemployed once fired. It states that the worker exerts effort if the present value of wage and intrinsic benefit from project success minus effort costs is higher than the present value of free-riding on manager effort and being fired after one period.

Solving out the ICC of the worker we get

$$w\left(e_M^*\right) \geq \left(A-1\right) e_M^* \theta_W + A\left(1-\theta_W\right) + \bar{u}_W$$

where

$$A \equiv \frac{1 + (1-\rho)\beta}{\beta}.$$

Notice that, as $\beta < 1$ and $\rho \leq 1$, $A > 1$. The interpretation of A is it is the efficiency wage for a worker who has no intrinsic motivation ($\theta_W = 0$) and unemployment benefits of $\bar{u}_W = 0$. As the cost of effort is 1, and the outside option is zero, A has to be greater than 1 for the agent to receive any rents. The lower is β (more impatient is the worker) and the lower is ρ (the easier it is for an unemployed worker to find a job), the larger is the incentive problem, and so the higher will be A.

To keep the exposition simple, for our basic results we restrict attention to the case where $\theta_W \leq 1$. This is a sufficient condition to rule out negative wage payments. In addition, it holds that

$$\left(A-1\right) e_M^* \theta_W + A\left(1-\theta_W\right) + \bar{u}_W \geq 1 - \theta_W + \bar{u}_W$$

for $A > 1$ and $\theta_W \leq 1$ so that we can ignore the worker PC constraint. The present value of employment is always larger than the present value of unemployment - at least as long as $\theta_W \leq 1$. We will comment on what happens in the case $\theta_W > 1$ at the end of the following section.

We study two cases regarding the worker´s outside option $\bar{u}_W$. If the good under question is a pure public good, and an unemployed worker can observe activity within the firm and receives θ_W even if they themselves are not working, so long as someone else is, then $\bar{u}_W$ includes θ_W. Other than this element, if there are some unemployment benefits (or some self-employment technology the worker has access to) which yields $\bar{u} \geq 0$ then $\bar{u}_W = \bar{u} + \theta_W$. Alternatively, if we assume that workers do not observe any activity within firms if they are unemployed whether or not the public good is provided, and who supplies the effort then $\bar{u}_W = \bar{u}$. Henceforth, we normalize $\bar{u} = 0$ and denote by $\delta\theta_W$ the outside option of a worker, with $\delta = 1$ capturing the pure public good case, and $\delta = 0$ capturing the impure public good case. We will see that the results are similar whether we assume that the firm produces a public good that is observed outside the firm or a local public good that can only be observed inside the firm. When we allow for endogenous matching, the outside option will also depend on the best offer made by another organization trying to hire this worker.

The manager's ICC in equation (1) states that financial plus intrinsic benefits of the project must be higher than the intervention cost c for him to exert effort. Throughout, in order to focus on the interesting cases, we restrict attention to parameter values that satisfy:

$$\textbf{Assumption } A1 : \pi \geq c - \theta_M \geq 0 \ .$$

If $A1$ is violated the manager is either always committed to no effort (i.e., $\pi + \theta_M < c$) or never committed to no effort ($\theta_M > c$).

The manager PC is given by the expected benefits of the contract (α, w) chosen by the manager and his outside option. We assume that the alternative to the contract (α, w) is manager provision.[16] Under this assumption, the manager's outside option is:

$$\bar{u}_M = \pi + \theta_M - c.$$

[16] We make this assumption to be as general as possible. If the alternative is another worker with equal or lower intrinsic motivation the manager PC is always satisfied.

The manager's PC can then be rewritten as

$$e_W^* (\alpha\pi + \theta_M) - w + (1 - e_W^*) e_M^* (\alpha\pi + \theta_M - c) \geq \pi + \theta_M - c. \quad (3)$$

3.2 Organizational Choice

The not-for-profit status comes at the cost of decreased rents to the manager, but with the benefit of lower wages. It will be chosen if the latter outweighs the former. This section derives necessary and sufficient conditions for this to be the case.

The key to understanding the role of not-for-profits lies in the manager ICC, namely, equation (1). The inequality shows that reducing the profit share α reduces the incentives of the manager to bail out a failing project because it reduces his financial benefit from project success. In other words, not-for-profit status can be used to reach commitment vis a vis the worker. If α is sufficiently low in the not-for-profit, the worker knows that her effort will be crucial for project success. This ability of the not-for-profit to commit the manager to no effort is crucial for its attractiveness from the perspective of the manager. If $A1$ is violated the choice of α does not affect either the manager's incentives (1) or the worker's incentives (2). Since lowering α from 1 directly reduces the manager's utility, $\alpha < 1$ is never chosen if the inequalities in $A1$ are not fulfilled.

If $A1$ if fulfilled, however, the manager can commit to let the project fail ($e_M^* = 0$) by adopting not-for-profit status. Formally, commitment is reached if the profit share satisfies:

$$\alpha \leq \alpha^* \text{ where } \alpha^* \equiv \frac{c - \theta_M}{\pi}.$$

The interpretation is, the monetary benefit $\alpha\pi$ is lower than the costs over and above what the manager is compensated for by intrinsic motivation, $c - \theta_M$. The threshold α^* follows immediately from the manager's ICC, namely, equation (1). It is important to note that in this model the reduction of financial incentives has no direct positive effects (like increased

investments or quality) but only serves as a commitment device for the manager. However, we show below that the advantage of not-for-profit status for the manager is that it might reduce wage payments.

From the worker's ICC, equation (2), the minimum wage needed to induce worker effort can be written as:

$$w\left(e_M^*\right) = A\left(1-\theta_W\right) + \left(A-1\right)e_M^*\theta_W + \delta\theta_W. \tag{4}$$

We show:

Lemma 1 *Assume A1 holds. Then not-for-profits with $\alpha \leq \alpha^*$ have to pay a smaller wage to workers to motivate worker effort ($e_W^* = 1$) than any firm with $\alpha > \alpha^*$, in particular, $\alpha = 1$.*

Proof. For $e_M^* = 0$ from (4) we get:

$$w\left(0\right) = A(1-\theta_W) + \delta\theta_W$$

and for $e_M^* = 1$, it is:

$$w(1) = A - \theta_W + \delta\theta_W.$$

As $A > 1$, $w\left(0\right) < w(1)$ for all $1 \geq \theta_W \geq 0$. Now the proof follows from the fact that non-profits with $\alpha \leq \alpha^*$ commit the manager to inactivity (i.e., $e_M^* = 0$). ■

Lemma 1 states that the incentive-compatible wage is lower in not-for-profits than in for-profits. The intuition is simple: if the manager is very motivated he saves the project in case it is about to fail ($e_M^* = 1$) and the worker receives θ_W regardless of her effort level. She is then tempted to free-ride on the public good provision by the manager and a higher efficiency wage is needed to motivate her to supply effort. In the not-for-profit the manager can reduce the profit share to α^* and commit to $e_M^* = 0$. This increases effort incentives for the worker because the worker now knows that without her effort the project will fail.

Henceforth we will refer to $w(0)$ as w^{NP} and $w(1)$ as w^{FP}. Table 1 summarizes the optimal wages and profit share for for-profits and not-for-

	Optimal Wage (w)	Optimal Profit Share (α)
for-profit	$w^{FP} = A - \theta_W + \delta\theta_W$	$\alpha^{FP} = 1$
not-for-profit	$w^{NP} = A(1 - \theta_W) + \delta\theta_W$	$\alpha^* = \frac{c-\theta_M}{\pi}$

Table 1: Optimal Wages and Profit Shares

profits. The optimal profit share in the not-for-profit is α^* because any further reduction would just reduce the retained profits of the manager but would not have any impact on the wage. Table 1 shows that efficiency wages are reduced by worker intrinsic motivation both in the for and not-for-profit. However, the wage reduction is higher in the not-for-profit.[17]

The payoff of the manager under a not-for-profit is $\alpha^*\pi + \theta_M - w^{NP}$ while his payoff under a for-profit is $\pi + \theta_M - w^{FP}$. The PCs of the manager under these two organizational forms are:

$$\alpha^*\pi + \theta_M - w^{NP} \geq \pi + \theta_M - c$$

and

$$\pi + \theta_M - w^{FP} \geq \pi + \theta_M - c.$$

These can be rewritten as:

$$c \geq \pi + \theta_M - c + w^{NP}$$

and

$$c \geq w^{FP}.$$

These conditions are intuitive. They mean that the wage in the not-for-profit plus the profit lost due to not-for-profit status needs to be smaller

[17] This is similar to the result in Besley and Ghatak (2005) that motivated workers are given less high-powered incentive schemes which results in lower expected wages, and like it, suggests that workers, if possible, would like to conceal their intrinsic motivation. We abstract from issues of observability of intrinsic motivation (or lack thereof), and consequently, the role of signalling and screening (see Benabou and Tirole, 2006 and Delfgaauw and Dur, 2007)

than the effort cost for the manager in autarchy. In the for-profit the wage has to be smaller than the manager's cost of effort. Substituting values of w^{NP} and w^{FP} the manager PCs can be simplified to:

$$NP \quad : \quad c \geq \frac{\pi + \theta_M + A(1 - \theta_W) + \delta\theta_W}{2} \tag{5}$$

$$FP \quad : \quad c \geq A - \theta_W + \delta\theta_W. \tag{6}$$

Now we turn to characterizing conditions when a not-for-profit will be chosen. We make the following assumption:

$$\textbf{Assumption } A2 : c > \max\left\{\pi + \theta_M + 1 - A, \frac{\pi + \theta_M + \delta}{2}\right\}.$$

This is a necessary condition for not-for-profits to satisfy the manager's PC for $\theta_W \leq 1$. If c is too low relative to the project benefits then the manager will never find it attractive to choose the not-for-profit and will prefer autarchy.

Given A1 and A2 we can characterize the trade-off between reduced financial return and reduced wages that can lead to not-for-profits being preferred to for-profits:

Proposition 1 *Assume A1 and A2 hold. The manager prefers the not-for-profit to a for-profit if and only if*

$$\theta_W \geq \max\left(\frac{\pi + \theta_M - c}{A - 1}, \frac{A + \pi + \theta_M - 2c}{A - \delta}\right) \tag{7}$$

However, workers never prefer the not-for-profit to a for-profit because the not-for-profit wage is lower.

Proof. See appendix B. ■

The intuition to the first part of the proposition is simple. If worker intrinsic motivation is high, the manager benefits from a not-for-profit because it reduces wages substantially. The loss of profit from adopting the not-for-profit status relative to the for-profit status is $(1 - \alpha^*)\pi$, which can be rewritten $\pi + \theta_M - c$. In other words, not-for-profit status leads to a

bigger loss if the project is very attractive from the manager's point of view. Therefore, the manager prefers the not-for-profit to the for-profit if his financial and intrinsic benefits from the project are not too high relative to the intrinsic motivation of the worker.

The worker's preference for the for-profit is surprising given the usual perception that intrinsically motivated workers prefer not-for-profit firms. In our model, under both the for-profit and the not-for-profit, the output is the same but the former pays a higher wage. Effectively, in not-for-profit firms, the manager free rides on the intrinsically motivated worker.[18]

This highlights an important difference to other models in the literature which derive not-for-profit status from contractual failure vis a vis the beneficiary. The difference becomes clear if we re-interpret the worker as a donor. In our model, the not-for-profit is a commitment device by the manager to stay inactive if the donor does not donate to the firm. This commitment increases donations but does not necessarily improve the welfare of the beneficiary. If the donor could choose he would donate to a for-profit.

Notice that our result is driven by the fact that managers will produce the public good even if they do not find a motivated worker, which is ensured by Assumption $A1$. It might seem that this biases the choice against not-for-profits. But if $A1$ does not hold, then not-for-profits cannot exist as the manager is either always committed to no effort or always committed to supply effort.

It should be stressed that this result is robust to a modification of the contractual environment. In particular, we show in the appendix that proposition 1 holds as well if the manager can contract on intermediate output and, thus, pay an incentive wage to the worker.

Our framework allows us to examine the effects of changes in manager and worker motivation on organizational choice very clearly.

By $A1$ the existence of a not-for-profit industry generally depends on a relatively low level of intrinsic benefits θ_M. If $\theta_M > c$, Assumption $A1$ is

[18] This relies on the assumption that the intrinsic motivation θ_W is the same in both cases. If motivation is not observable then working in a not-for-profit for a low wage could serve as a signal that one is pro-social (as in Benabou and Tirole, 2006).

violated and the not-for-profit looses its ability to commit the manager to no effort. As a result, for-profits are always chosen. On the other hand, if $\theta_M = 0$, not-for-profits can exist so long as the conditions in Proposition 1 are satisfied. Also, a rise in financial benefits, π, makes the adoption of not-for-profit status less attractive. We summarize this as:

Observation 1 *The greater* are *financial project benefits (π) or intrinsic motivation of the manager (θ_M) the less likely not-for-profits will be the chosen organizational form.*

The intuition is simple. Since the key issue is free-riding, if the manager is very motivated, it is increasingly costly to commit not to work on the project in case the worker shirks and the not-for-profit form becomes increasingly unattractive. This provides a theory of the choice between for-profit social enterprises and not-for-profits. Social enterprises can be organized as either for-profits or not-for-profits and combine a revenue generating business with a social value generating component. They pursue what is often referred to as a double bottom-line which is a combination of profit and mission-related impact. It is argued that revenue generation allows social enterprises to be self-sustaining and profits attract additional capital to solve social ills.[19]

Next we turn to worker motivation. Clearly, if workers are unmotivated ($\theta_W = 0$) then not-for-profits will never be chosen. Proposition 1 shows that worker motivation will have to exceed some positive threshold for not-for-profits to become an attractive option.

Observation 2 *If the worker has very low intrinsic motivation then for-profits will be preferred by the manager.*

What happens if workers are very motivated? Recall that so far we have restricted attention to $\theta_W \leq 1$ to keep the exposition simple. Now let us consider the implications of allowing $\theta_W > 1$. The worker PCs now start to play a role. The commitment to inactivity by the manager in the not-for-profit firm makes workers worse off when they shirk than when they are

[19] See Martin and Osberg (2007) and Bornstein (2004).

unemployed. Formally, the worker PC looks like

$$\theta_W - 1 + w \geq \delta\theta_W$$

inserting the not-for-profit wage

$$A(1 - \theta_W) \geq 1 - \theta_W$$

which binds at $\theta_W = 1$. Hence, for $\theta_W > 1$ the not-for-profit wage that satisfies the PC is $w^{NP} = 1 - \theta_W + \delta\theta_W$. Since the PC is binding, an efficiency wage premium is no longer paid to these workers to incentivize them. The fact that they are very motivated and that under not-for-profits managers can credibly commit not to supply effort if the worker shirks, is enough to incentivize them.

Notice that for $\delta = 0$ (output is not observable outside of the firm), $w^{NP} < 0$, whereas for $\delta = 1$, $w^{NP} = 1$. The intuition is as follows: in the former case, in effect the project is an impure public good to the worker and the benefits accrue only if the worker works for the firm than otherwise. This allows the manager to offer the worker a negative wage. In the latter case, the project is a pure public good to the worker and therefore, the firm will have to offer him at least the cost of effort, otherwise, the worker will prefer not to work for the firm since someone else will supply the requisite effort.

Turning to for-profit wages, recall that $w^{FP} = A - \theta_W + \delta\theta_W$. The worker PC can be rewritten as $w \geq 1 - \theta_W + \delta\theta_W$. As $A > 1$, comparing the two, we can see that for for-profits the PC never binds. Under a for-profit the manager cannot commit not to supply effort if the worker does not, and this means the worker will have to be paid an efficiency wage premium to supply effort which (by definition) is not possible if the PC binds.

Inserting the for-profit and not-for-profit wages in the case where $\theta_W > 1$ in the condition for not-for-profits to be chosen, i.e., $w^{FP} - w^{NP} \geq \pi + \theta_M - c$, we get

$$A - 1 \geq \pi + \theta_M - c$$

which suggests comparative static results that are similar to Proposition 1.

Observation 3 *If workers are very motivated ($\theta_W > 1$) not-for-profits can elicit worker effort by paying them a flat wage that respects their participation constraint, without using an efficiency wage mechanism. The flat wage will be negative if θ_W accrues to the worker only if the worker works for the firm. Otherwise it will be positive and equal to the cost of effort.*

An example might illustrate the relevance of this case. There is a quickly growing industry of volunteer tourism which combines typical backpacking trips with development work (see Guttentag, 2009). In this sector, not-for-profit as well as for-profit firms provide local development work for the traveler. Most of the field work requires only unskilled labor, available in abundance in the local community. Still, volunteers are intrinsically so motivated that they are willing to pay the organization to get work. The labor market therefore features payments from the worker to the organization (a negative wage) in return for the opportunity to make a difference. It has been noted that not-for-profits still dominate this industry (Guttentag, 2009) and that these volunteers are increasing the supply of unskilled labour in local labour markets.

3.3 Labor Markets and Organizational Choice

This section extends the model derived in the previous section to a labor market setting where a number of workers and managers match endogenously. The aim of this exercise is to show that labor market conditions and organizational choice are closely linked, a point that existing theories of not-for-profits have ignored.

Assume that there are M managers with intrinsic motivation $\theta_M \geq 0$, N_m motivated workers with $\theta_W > 0$ and N_u unmotivated or neutral workers with $\theta_W = 0$. In what follows we assume that there is some unemployment, $N_u + N_m > M$. However, we will allow the degree to which motivated workers are scarce to vary, i.e., $N_m \gtrless M$.

At the matching stage managers choose a contract (α, w) to maximize their expected utility $EU(e_W^*, e_M^*)$ subject to the PC of themselves and that of the worker. A stable matching is one where no change of match could strictly increase a manager's or worker's utility without making the new matching partner worse off compared to how she was before. Production takes place once a stable matching is reached.

Note first, that the observation of firm output in the pure public good case, $\delta = 1$, now leads to a benefit of

$$\bar{U}_W = \sum_{i \neq j}^{M} \max\left(e_{iW}^*, e_{iM}^*\right) \theta_W$$

to all workers j where i is an index for all managers in different matches. By assumption $A1$ worker j expects a provision level of $\bar{U}_W = (M-1)\,\theta_W$ in all other firms independently of her participation in the offered contract. Our analysis of the worker PC in section 3.1 still applies. The worker only worries about the marginal impact of the rejection of her contract when considering an offer.

A crucial question for the effect of the labor market on organizational choice is whether the for-profit organizational form can satisfy the manager's PC. Assume first that for-profits are feasible in the sense that the manager always prefers to be in a for-profit than to produce alone.

Proposition 2 *Assume A1 and that for-profit provision is feasible, i.e., $c \geq A - \theta_W + \delta\theta_W$. If motivated labor is scarce $(N_m < M)$ then not-for-profit firms cannot exist in labor market equilibrium.*

Proof. We prove the proposition by contradiction. Assume that there are some not-for-profits in a matching equilibrium with $N_m < M$. As motivated workers are scarce $(N_m < M)$ there are some managers who are matched with an unmotivated worker. These managers will always set up for-profit firms because not-for-profit status does not reduce their wage bill, $w^{FP} = A$. A worker in a not-for-profit firm can therefore improve her position by replacing an unmotivated worker in a for-profit match. The manager will accept this swap because he (weakly) prefers a for-profit match with a motivated

worker to a for-profit match with an unmotivated worker. Formally, the worker PC is now

$$\begin{aligned} & \max\left(e_W^*, e_M^*\right)\theta_W - e_W^* + w + \delta\bar{U}_W \\ \geq \quad & \theta_W - 1 + A + \delta\theta_W + \delta\bar{U}_W \end{aligned}$$

which implies that the offer $\left(\alpha^*, w^{NP}\right)$ is not feasible because it leads to a violation of the worker PC. ■

An immediate corollary is:

Corollary 1 *Assume A*1 *and that for-profit provision is feasible,* $c \geq A - \theta_W + \delta\theta_W$*. If motivated workers are abundant* $(N_m > M)$ *then not-for-profits can exist in labor market equilibrium and Proposition 1 applies.*

Proposition 2 provides a pessimistic view of not-for-profit firms. It states that if the adoption of not-for-profit status is motivated by the desire to use intrinsic motivation of workers to reduce wages then a slack labor market is a necessary condition for this to be feasible. The reason is simply that given a choice, workers always want to work for a higher wage. As we showed in the previous section, the incentive-compatible wage rate is lower in a not-for-profit than in a for-profit. Therefore, in a situation of labor surplus, not-for-profits can exist. But in a labor-scarce situation, only the higher wage rate is relevant and so not-for-profits will be crowded out of the market by for-profits.

An important insight from this result is that the choice between not-for-profit and for-profit provision is not always a question of resolving incentive problems but also one of distribution of rents. In both organizational forms the worker provides the good at effort cost of 1. The only difference is the wage that the manager has to pay the worker. From this point of view, the not-for-profit is a method of redistributing rents towards the manager of the firm.

Therefore, our analysis suggests that organizational choice would depend on, among other things, the relative scarcity of workers and managers. If workers are abundant then managers can choose their preferred organi-

zational form as if they were matched exogenously with a worker. Under $A1$ and $A2$ this situation is captured by condition (7). Not-for-profits are chosen when the wage reduction compensates the manager for the reduced financial gains. Workers have to swallow the resulting reduction in wages because there is an oversupply of motivated labor.

While we do not focus on this, the endogenous matching framework offers an explanation why we observe the coexistence of for-profits and not-for-profits in some sectors. Assuming motivated workers are not scarce, if there is heterogeneity in some parameter such as θ_M, condition (7) can hold for some managers and not for others. If for-profits and not-for-profits coexist, for-profits will be led by more motivated managers.

So far we have compared the not-for-profit status directly with the for-profit status. The picture changes somewhat if managers prefer working alone to setting up for-profit firms.

Proposition 3 *Assume A1 and A2. Regardless of the relative scarcity of managers and workers* $\left(M \gtreqless N_m\right)$ *there is a not-for-profit sector if the manager's PC can be satisfied in the not-for-profit but not in the for-profit, i.e. if*

$$\frac{A-c}{1-\delta} \geq \theta_W \geq \frac{A+\pi+\theta_M-2c}{A-\delta}.$$

Proof. See appendix C. ■

According to Proposition 3 not-for-profits could play a role in industries that are not attractive to for-profit firms. The reason is that not-for-profits lead to a redistribution of rents towards owners of assets and can therefore make setting up a firm easier. The conditions in the proposition indicate that not-for-profits arise as long as the available projects are not too attractive (both in terms of pecuniary and non-pecuniary returns) for the manager and for intermediate values of worker intrinsic motivation.

An interesting comparative static result that follows directly from Propositions 2 and 3 is that, as c rises for-profits can become feasible, and an industry that produces public goods might change from not-for-profit provision to for-profit provision. If we interpret c as the level of specialization in the

labor force, not-for-profits will be most common in industries that combine high level of worker intrinsic motivation with a low level of specialization.[20]

3.4 Welfare

So far we have focused on the choice between not-for-profits and for-profits from the point of view of the manager. In this section we discuss the welfare implications. In order to keep the focus on the comparison between not-for-profits and for-profits we assume throughout that the manager's PC does not bind in any of the two organizational forms.

Before we turn towards the welfare implications, however, we turn towards a brief discussion of first-best effort. First-best effort maximizes total surplus. For the second stage this implies that the manager should exert effort ($e_M = 1$) if $y_1 = 0$ and

$$\pi + \theta_W + \theta_M - c \geq 0$$

and $e_M = 0$ otherwise. Notice that $A1$ implies that the above condition holds. Also, the condition for the worker to exert effort ($e_W = 1$) in the first stage is $\pi + \theta_W + \theta_M - 1 \geq 0$, and this is implied by the above condition as by assumption $c \geq 1$.

Not-for-profits commit the manager to no effort in our model because a share of profits $(1 - \alpha)\pi$ cannot be captured by him. The first question is whether the share of profit that is lost to the manager is a deadweight loss (as in Glaeser and Shleifer, 2001), because, for example, he consumes it in the form of perks even though he would have preferred to have it in the form of cash, or whether it is redistributed towards the beneficiary of the project (as in Easly and O´Hara, 1983). If we assume the former, then choosing not-for-profits over for-profits will always decrease welfare. This is because the effort allocation does not change but not-for-profits waste resources by

[20] This comparative static is partly supported by a survey among 1900 persons responsible for human resources (HR) in the voluntary sector in England (Clark (2007)). The study shows that vacancies which require specific skills were most likely to be categorized as hard to fill by the HR personal. It is not clear, however, whether this was due to general scarcities or a not-for-profit phenomena.

making it harder for the manager to capture the profit.

If the profit share $(1-\alpha^*)\,\pi$ is redistributed and not wasted, both organizational forms are equivalent in terms of welfare. To see this, note that all that matters for welfare in this case is who exerts effort. In both the for-profit and the not-for-profit the manager pays the worker an efficiency wage so that the worker does supply effort, and, therefore, the cost of production is one. For-profit and not-for-profit are therefore equivalent in terms of welfare. The only difference between the organizational forms is that the not-for-profit distributes more of the gains to the manager (and to a third party) and less to the worker. However, as we will see in the next section, the equivalence between for- and not-for-profits depends on our strong assumption that production is non-stochastic and it is sufficient for either the worker or the manager to supply effort for the project to go through.

4 Extension: Stochastic Project Success

The basic model presented above is based on a particular simplifying assumption. Removing it will add an extra effect that will go against the choice of not-for-profits. In particular, the assumption that the project always succeeds in case of worker effort reduces the welfare loss caused by manager commitment in the not-for-profit. If projects could fail despite worker effort then there is a positive role to be played by an active manager. To see this, assume that worker and manager effort lead to project success with a probability $h < 1$. The ICC of the manager changes to:

$$e_M^*\left(h,\alpha,\pi,c,\theta_M\right) = \begin{cases} 1 & if \quad h\left(\alpha\pi+\theta_M\right) \geq c \\ 0 & otherwise \end{cases}.$$

From the ICC we can see immediately that the α^* that commits the manager to no effort is now

$$\alpha^* = \frac{\frac{c}{h}-\theta_M}{\pi}$$

which implies that assumption $A1$ has to be modified to

$$\textbf{Assumption } A3 : \pi \geq \frac{c}{h} - \theta_M \geq 0.$$

We derive the two efficiency wages in appendix D, they are

$$w^{NP} = A\left(1 - h\theta_W\right) + \delta h\theta_W$$

for the not-for-profit and

$$w^{FP} = A\left(1 - h\theta_W\right) + \left(Ah - 1\right)h\theta_W + \delta h\theta_W$$

for the for-profit, where $A \equiv \frac{1+(1-\rho)\beta}{\beta}$ as before.

First note, that the for-profit wage can now actually be lower than the not-for-profit wage if $Ah < 1$. This is because the worker benefits from being employed in a company that has a motivated manager even if the worker exerts effort himself. If h is relatively small this factor weighs more heavily. Intuitively, an increasing failure rate $1 - h$ increases the chance that the manager has to exert effort despite worker effort. This additional benefit is reflected in efficiency wages. In order to make not-for-profit dominance possible we need to assume that

$$\textbf{Assumption } A4 : Ah \geq 1$$

so that $w^{FP} \geq w^{NP}$. For non-negativity of wages it then suffices to assume that $\theta_W < \frac{1}{h}$.

We discuss the manager PCs in appendix E. As before, in order for the not-for-profit to be feasible we need to assume that

$$\textbf{Assumption } A5 : c \geq \max\left(\frac{h\left(\pi + \theta_M + \delta\theta_W\right)}{2}, h\left(\pi + \theta_M\right) - \frac{Ah - 1}{2 - h}\right).$$

Given these assumptions it is still possible that the not-for-profit is chosen by the manager. However, this can only be the case if the wage gains compensate the manager not only for lost profits but also for a loss in pro-

ductivity. To see this, note that the manager prefers the not-for-profit if

$$\begin{aligned} & h\left(\alpha^{*}\pi+\theta_{M}\right)-w^{NP} \\ \geq\ & h\left(\pi+\theta_{M}\right)-w^{FP}+\left(1-h\right)\left[h\left(\pi+\theta_{M}\right)-c\right]. \end{aligned}$$

where the third term on the right-hand side represents the productivity benefit for the manager. If the project is about to fail (with probability $1-h$) the manager in the for-profit can intervene. The following proposition then characterizes the conditions under which not-for-profits will be chosen:

Proposition 4 *Assume that A3, A4 and A5 hold. The manager prefers the not-for-profit to the for-profit if*

$$\theta_{W}\geq\max\left(\frac{2-h}{\left(Ah-1\right)h}\left(h\left(\pi+\theta_{M}\right)-c\right),\frac{A+h\left(\pi+\theta_{M}\right)-2c}{h\left(A-\delta\right)}\right).$$

Proof. See appendix F. ■

Proposition 4 follows proposition 1 closely in the intuition. It states that not-for-profits can be preferred if worker intrinsic motivation is large compared to the benefits of project success.

The efficiency gain in the for-profit also makes for-profit status more attractive to the worker because the average provision rate is higher under that organizational form. Hence, for-profits dominate not-for-profits in terms of welfare even if the not-for-profit does not waste resources (i.e., the fraction $1-\alpha^{*}$ goes to third parties). To see this note that welfare under a for-profit is higher if

$$\begin{aligned} & h\left(\pi+\theta_{M}+\theta_{W}\right)-1+\left(1-h\right)\left(h\left(\pi+\theta_{M}+\theta_{W}\right)-c\right) \\ >\ & h\left(\pi+\theta_{M}+\theta_{W}\right)-1 \end{aligned}$$

where the left-hand-side displays welfare under a for-profit and the right-hand side is the welfare under a not-for-profit. By assumption $A3$ this is always satisfied because $h\left(\pi+\theta_{M}+\theta_{W}\right)>c$.

In summary, our analysis above offers an interesting insight concerning the choice of not-for-profit status. Even if not-for-profits may yield lower

expected surplus than for-profits, they might be chosen because of the rent extraction (i.e., paying the worker low wages) vs. efficiency trade-off that the manager faces. Even if it is socially efficient for both the worker and the manager to supply effort, the manager might want to tie his hands and commit not to supply effort if the need arises, in order to relax the worker's ICC.

5 Discussion

Our analysis suggests that organizational choice between for-profits and not-for-profits would depend on, among other things, the relative scarcity of workers and managers. In particular, the abundance of motivated labor in some sectors may lead to the rise of not-for-profit organizations. Figure 1 provides a crude look at the existing cross-country evidence regarding the connection between not-for-profit (paid) employment and unemployment rates.[21] For comparability we only focus on OECD countries. The graph shows a suggestive pattern with respect to groups of countries. Countries with very low unemployment rates (Sweden, Norway, Japan and Finland) also feature the least employment in not-for-profit firms. Most European continental countries as well as Australia, the US and UK feature both higher unemployment rates and higher not-for-profit employment. This pattern is only broken by Spain and Italy which feature both higher unemployment and low not-for-profit involvement.[22] Clearly we cannot infer anything causal from this correlation, but it does suggest that with richer data macroeconomic factors such as unemployment rates (as well as institutional factors like the regulatory regime) might be useful in understanding the prevalence of not-for-profits. Our argument is, for example, consistent with some of the data presented in Mocan and Tekin (2003). Their evidence on worker selection show that weak labor market participants like Blacks and Hispanics are overrepresented in not-for-profits. While this could be

[21] Not-for-profit employment data (1991-1996) is from Salamon (1999). Unemployment rates (1990) are from the the CIA World Factbook.

[22] Dropping the three countries with double-digit unemployment makes the correlation significant at 5% level.

driven by factors such as not-for-profits being less likely to discriminate, it is also consistent with our model.

More generally, our finding that labor market conditions affect organizational choice is relevant for empirical analysis as it suggests that measures of labor market slackness (for specific worker characteristics) might be an important omitted variable in studies that look at the effect of not-for-profit status on wages and labor donations. For example, unemployment is most likely correlated with typical dependent variables like wages (negative correlation) and labor donations (positive correlation) and might therefore bias the coefficient on not-for-profit status upwards.

Our model suggests that employment in the not-for-profit sector should go up in a recession. By Proposition 2, a fall in the number of job openings or firms (which can be interpreted as a fall in M) relative to the number of motivated workers (N_m) will cause employment to go up in the not-for-profit sector. Also, by observation 1, a fall in financial profits (π) will result in greater employment in the not-for-profit sector.

These implications of the model are consistent with available evidence. For example, the counter-cyclical behavior of employment in the not-for-profit sector is well documented. In particular, during recessions employment in not-for-profits goes up while for-profit employment declines. For example, Salamon and Sokolowski (2006) show that between 2002-2004 both the paid and volunteer portions of the not-for-profit workforce grew by over 5 percent in the US, whereas overall employment in the economy declined by 0.2 percent. Salamon and Geller (2010) point out that despite the recession underway at the time, not-for-profit employment in Maryland continued its growth in 2008, increasing by 2.7 percent between the fourth quarter of 2007 and the fourth quarter of 2008. By contrast, for-profit employment in Maryland decreased by 3.3 percent during this same period, eliminating over 61,000 jobs. The authors note that the not-for-profit sector accounted for all of the state's private employment growth between 2007 and 2008, demonstrating its role as a critical counter-cyclical force.

In addition, Observation 1 suggests that if the financial profit (π) component of projects become more important, for-profits will displace not-for-

profits. This too is consistent with available evidence. For example, the growth in the market share of for-profit providers is well-documented in the context of the US health-care sector and expanded health insurance coverage is considered to be one of the key contributing factors (see, for example, Frank and Salkever, 1994). Interestingly, between 1970 and 1995, 330 out of approximately 5000 (about 7%) not-for-profit hospitals in the US converted to for-profit corporate form and the key factor driving this trend is considered to be financial considerations, i.e, profitability (see, Cutler and Horwitz, 2000).

6 Conclusion

In this paper we re-examine the labor donation theory of not-for-profits based on free-riding developed by Francois (2000, 2003). We embed the choice of for-profits vs. not-for-profits in a labor market setting where firms and workers match endogenously. We show that motivated workers are better off working in a for-profit firm compared to a not-for-profit firm. We show that if firms had to compete for workers not-for-profit firms would be competed out by for-profit firms. As a result we conclude that the reason for the existence of not-for-profit organizations may be because of the excess supply of motivated workers that make the non-profit form more attractive to managers. We also show that, assuming both organizational forms are feasible, for-profits welfare dominate not-for-profits, and strictly so, if production involves some uncertainty.

7 Appendix

A Efficiency Wage

The worker is assumed to be infinitely lived. If the worker is employed and exerts effort, she is not fired, and receives the present value of

$$\begin{aligned} E &= \theta_W + w - 1 + \beta E \\ &= \frac{\theta_W + w - 1}{1 - \beta}. \end{aligned}$$

We assume here that the worker is fired with certainty if she shirks and remains unemployed with probability ρ once she is in that state. An unemployed worker receives a per period payoff of $\overline{u}_W$. Therefore, if unemployed, the worker earns a present value of

$$U = \overline{u}_W + \beta \left(\rho U + (1 - \rho) E \right).$$

This simplifies to

$$U = \frac{\overline{u}_W}{1 - \beta\rho} + \frac{\beta (1 - \rho)}{1 - \beta\rho} \frac{\theta_W + w - 1}{1 - \beta}.$$

where we inserted the present value of employment with effort.

If the worker shirks she is caught with certainty, and her present value of utility is

$$S = w + e_M^* \theta_W + \beta U.$$

The dependence on e_M^* reflects the assumption that the manager cannot immediately replace a worker if she is fired, and will have to supply effort himself for that period.

The worker exerts effort if

$$E \geq S$$

or

$$\frac{\theta_W + w - 1}{1 - \beta} \geq w + e_M^* \theta_W + \beta^2 \frac{(1 - \rho)}{1 - \beta\rho} \frac{\theta_W + w - 1}{1 - \beta} + \beta \frac{\overline{u}_W}{1 - \beta\rho}.$$

Equation (2) follows immediately.

B Proof of Proposition 1

The manager prefers the not-for-profit to a for-profit if

$$\alpha^*\pi + \theta_M - w^{NP} \geq \pi + \theta_M - w^{FP}.$$

Given $A1$, α^* lies between zero and 1. Inserting $\alpha^* = \frac{c-\theta_M}{\pi}$ and re-arranging, we get:

$$w^{FP} - w^{NP} \geq \pi + \theta_M - c.$$

Inserting w^{FP} and w^{NP} we get:

$$A - \theta_W - A\left(1 - \theta_W\right) \geq \pi + \theta_M - c$$

or

$$\theta_W \geq \frac{\pi + \theta_M - c}{A - 1}.$$

Also, the condition for not-for-profits to satisfy the manager's PC is, rewriting (5):

$$\theta_W \geq \frac{\pi + \theta_M + A - 2c}{A - \delta}$$

Given $A2$ this condition is consistent with $\theta_W \leq 1$ for both $\delta = 0, 1$. The above two conditions can be combined as (7). Given $A2$ (which ensures that the right hand side of (7) is less than 1) we know that there is a range of values of $\theta_W \leq 1$ that can satisfy this condition.

The worker prefers the not-for-profit if

$$\theta_W + w^{NP} > \theta_W + w^{FP}$$

which, given Lemma 1 is never the case. This completes the proof.

C Proof of Proposition 3

The relevant choice for the manager is between working alone and setting up a not-for-profit. Therefore, the relevant condition combines the condition for a not-for-profit to be chosen over autarchy, and for-profits not satisfying the manager's PC, i.e., rewriting inequalities (5) and (6) in terms of θ_W and combining them.

D Wages with Stochastic Success

If the worker is employed and exerts effort, she is not fired, and receives the present value of

$$\begin{aligned} E &= h\theta_W + (1-h)\, p\theta_W + w - 1 + \beta E \\ &= \frac{h\theta_W + (1-h)\, p\theta_W + w - 1}{1-\beta} \end{aligned}$$

where $p \in \{0, h\}$ is the probability that the manager will provide the good. The unemployed worker has an expected utility of

$$\begin{aligned} U &= \delta h\theta_W + \beta\left(\rho U + (1-\rho)\, E\right) \\ &= \frac{\delta h\theta_W}{1-\beta\rho} + \frac{\beta\,(1-\rho)}{1-\beta\rho}\frac{h\theta_W + (1-h)\, p\theta_W + w - 1}{1-\beta}. \end{aligned}$$

If the worker shirks her present value of utility is

$$S = w + p\theta_W + \beta U.$$

The worker exerts effort if

$$E \geq S$$

or

$$\frac{h\theta_W + (1-h)\, p\theta_W + w - 1}{1-\beta} \geq w + p\theta_W + \beta\frac{\delta h\theta_W}{1-\beta\rho} + \beta^2\frac{(1-\rho)}{1-\beta\rho}\frac{h\theta_W + (1-h)\, p\theta_W + w - 1}{1-\beta}.$$

Simplifying, and solving for w we get:

$$w \geq \left(\frac{1+(1-\rho)\beta}{\beta}\right)\left(1-h\theta_W+\left(h-\frac{\beta}{1+(1-\rho)\beta}\right)p\theta_W\right)+\delta h\theta_W$$

Therefore, the wage in the not-for-profit is:

$$w^{NP} \geq A\left(1-h\theta_W\right)+\delta h\theta_W.$$

In the for-profit, it is:

$$w^{FP} \geq A\left(1-h\theta_W+\left(h-\frac{1}{A}\right)h\theta_W\right)+\delta h\theta_W$$

which simplifies to the condition given in the text.

E Manager PCs with Stochastic Success

The manager's PC in the for-profit is

$$h\left(\pi+\theta_M\right)-w^{FP}+\left(1-h\right)\left(h\left(\pi+\theta_M\right)-c\right) \geq h\left(\pi+\theta_M\right)-c$$

or

$$c \geq \frac{h\left(1-h\right)\left(\pi+\theta_M\right)+A-\left(A\left(1-h\right)+1\right)h\theta_W+\delta h\theta_W}{h}.$$

In the not-for-profit, it is:

$$h\left(\alpha^*\pi+\theta_M\right)-w^{NP} \geq h\left(\pi+\theta_M\right)-c$$

or

$$c \geq \frac{h\left(\pi+\theta_M+\delta\theta_W\right)+A\left(1-h\theta_W\right)}{2}.$$

Given the restriction $h\theta_W \leq 1$ we need to assume that

$$c \geq \frac{h\left(\pi+\theta_M+\delta\theta_W\right)}{2}.$$

Also, as will be seen in the proof to proposition 4, we need

$$c \geq h\left(\pi + \theta_M\right) - \frac{Ah - 1}{2 - h}.$$

F Proof of Proposition 4

The proof for Proposition 4 is similar to the proof of Proposition 2. The condition for the not-for-profit is preferred is:

$$\begin{aligned} & h\left(\alpha^* \pi + \theta_M\right) - w^{NP} \\ \geq \quad & h\left(\pi + \theta_M\right) - w^{FP} + (1 - h)\left(h\left(\pi + \theta_M\right) - c\right). \end{aligned}$$

Plugging in

$$\alpha^* = \frac{\frac{c}{h} - \theta_M}{\pi}$$

and the wages, we get:

$$\begin{aligned} & c - \left(\frac{1 + (1 - \rho)\beta}{\beta}\right)(1 - h\theta_W) \\ \geq \quad & h\left(\pi + \theta_M\right) - \left(\frac{1 + (1 - \rho)\beta}{\beta}\right)\left(1 - h\theta_W + \left(h - \frac{\beta}{1 + (1 - \rho)\beta}\right) h\theta_W\right) \\ & + (1 - h)\left(h\left(\pi + \theta_M\right) - c\right). \end{aligned}$$

After rearranging and with $A = \frac{1+(1-\rho)\beta}{\beta}$ we get:

$$\theta_W \geq \frac{2 - h}{(Ah - 1)\, h}\left(h\left(\pi + \theta_M\right) - c\right).$$

The PC of the manager in the not-for-profit is:

$$h\left(\alpha^* \pi + \theta_M\right) - w^{NP} \geq h\left(\pi + \theta_M\right) - c$$

or,

$$\theta_W \geq \frac{A + h\left(\pi + \theta_M\right) - 2c}{h\left(A - \delta\right)}.$$

G Contractible Output

Assume that intermediate output in contractible so that a wage can be paid on it. Assume, as before, that manager and worker move consecutively. First the worker chooses $e_W \in \{0,1\}$ then, after observing project outcome the manager: (a) pays w to the worker when it succeeds and 0 when it fails; and (b) chooses $e_M \in \{0,1\}$. The probability of project success in each stage is

$$\begin{array}{rcl} p_i & = & \begin{cases} h & if \quad e_i = 1 \\ 0 & if \quad e_i = 0 \end{cases} \\ 1 & > & h > 0 \text{ and } i = M, W. \end{array}$$

where we assume $p_i = 0$ if $e_i = 0$ just for simplicity. Assume, as before, and effort cost of 1 for the worker and $c \geq 1$ for the manager.

Before the game starts the manager maximizes

$$\underset{w,\alpha}{EU_M} = p_W^* (\alpha\pi - w + \theta_M) + (1 - p_W^*) \{p_M^* (\alpha\pi + \theta_M) - ce_M^*\}.$$

The manager exerts effort $e_M^* = 1$ iff

$$h (\alpha\pi + \theta_M) - c \geq 0$$

or

$$e_M^* = \begin{cases} 1 & if \quad h (\alpha\pi + \theta_M) \geq c \\ 0 & otherwise \end{cases} \tag{8}$$

The worker maximizes

$$EU_W = p_W (w + \theta_W) + (1 - p_W) p_M^* \theta_W - e_W.$$

He chooses $e_W = 1$ iff

$$h (w + \theta_W) + (1 - h) p_M^* \theta_W - 1 \geq p_M^* \theta_W$$

so that

$$e_W^* = \begin{cases} 1 & if \quad h\left(w + \left(1 - p_M^*\right)\theta_W\right) \geq 1 \\ 0 & otherwise \end{cases} . \tag{9}$$

Note that the incentive to exert effort is decreasing in p_M^* (like it is decreasing in e_M^* in the efficiency wage model) for $\theta_W > 0$.

As the manager ICC looks exactly as in the stochastic project success case we can directly adopt the calculation of

$$\alpha^* = \frac{\frac{c}{h} - \theta_M}{\pi}$$

and the necessary assumption $A3$.

For simplicity, we assume that the participation constraints are fulfilled and that the worker cannot be paid a negative wage $w \geq 0$. Assume that the manager wants to use the worker's input in both organizational forms (i.e., c is sufficiently large).

From the worker's ICC we know that the for-profit wage is:

$$w^{FP} = \max\left\{0, \frac{1}{h} - (1-h)\,\theta_W\right\}$$

and the not-for-profit wage is given by:

$$w^{NP} = \max\left\{0, \frac{1}{h} - \theta_W\right\}.$$

which implies, $w^{FP} \geq w^{NP}$ by $h > 0$.

The manager prefers the not-for-profit if

$$h\left(\alpha^*\pi - w^{NP} + \theta_M\right) \geq h\left(\pi - w^{FP} + \theta_M\right) + (1-h)\left(h\left(\pi + \theta_M\right) - c\right).$$

Substituting the values of w^{FP}, w^{NP}, and α^* we get:

$$\theta_W \geq (2-h)\,\frac{h\left(\pi + \theta_M\right) - c}{h^2}$$

This condition similar to the one in Proposition 1 in the paper.

Acknowledgements: We thank Tim Besley, Konrad Burchardi, Manishita Dass, Patrick Francois, Paul Grout, Gilat Levy, Rocco Macchiavello, Sarah Sandford, and several seminar audiences for helpful feedback. We also thank Michael Best for excellent research assistance. The first author acknowledges financial support from STICERD, and the second author acknowledges the support of Barcelona GSE Research and the Government of Catalonia. We are responsible for all remaining errors.

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Figure 1:Not-for-profit employment and unemployment rates in OECD countries